

Background

Pine View Estates: Region 9 conducted an inspection of a LCSS at a residential subdivision in Nevada on November 20, 2003. The Region is concerned that the LCSS may be endangering the area's ground water quality and public health.

Findings

Region 9's inspection of the LCSS indicated the following—

- The drainfield design criteria was substantially less protective than EPA's Onsite Wastewater Treatment System (OWTS) Design Manual.
- Three community drainfield failed over the past year (Leachfield A failed twice and Leachfield B failed once during the construction of a storm water drainage).
- A large volume of standing water was observed in nearly all community drainfield monitoring ports.
- The ground water elevation was approximately 30 feet below the ground surface coupled with a severely overloaded drainfield.
- A public water supply well was in close proximity to the community drainfields.

Given these initial findings, the LCSS is creating a public health threat by introducing nitrates, bacteria, and viruses onto the land surface and possibly into ground water. Human exposure to these contaminants can potentially result in illnesses such as blue baby syndrome, cholera, typhoid fever, and dysentery. In addition, the flow of surfacing effluent from a failing drainfield into a drainage that flows into a water of the United States is a potential violation of the Clean Water Act (CWA).

Region 9 also found that the current wastewater facility management plan has the Homeowner's Association responsible for maintenance of the community drainfields and the individual homeowners responsible for maintenance of their own septic tanks. EPA believes that a community drainfield cannot be properly maintained unless the septic tanks attached to it are properly maintained, and individual homeowners typically do not perform adequate septic tank maintenance.

Recommendations

Region 9 made the following recommendations—

- The drainfield designs should adhere to the onsite wastewater design criteria required by the regulatory agency adjacent to the tribal lands, due to their expertise in the local hydrogeologic conditions.
- No construction of additional drainfields should begin before EPA reviews the design plans.
- The flow of wastewater to Leachfield A should be drastically reduced and redirected to a new drainfield area as soon as possible. Leachfield A is severely overloaded and provides a substantial risk to public health as evidenced by two recent failures and standing water in the monitoring ports during the November 20, 2003 inspection.

- Advanced wastewater treatment should be incorporated after the individual septic tanks due to the limited area available to construct drainfields. Removal of nitrates, bacteria, and viruses from the wastewater prior to drainfield injection will mitigate the environmental and public health threats associated with the existing treatment system. Technologies including media filtration, extended aeration, and disinfection should be investigated to determine the best available wastewater treatment to protect the subdivision's public and environmental health.
- The Homeowner's Association should organize management of the septic tanks with funds collected through homeowner fees. A qualified pumping company should be contracted to inspect and pump (if necessary) the individual septic tanks throughout subdivision on an annual basis. This will save costs to the homeowners and ensure longevity of the community drainfields, provided the design of the wastewater treatment system is adequate. The Homeowner's Association should also coordinate an effort to educate homeowners on how to properly use a septic system. Region 9 would like to see this recommendation incorporated into the Homeowner's Association codes.
- Monitoring wells should be installed downgradient (in terms of groundwater) of the community drainfields to determine the impact of the LCSS on the area's ground water. These monitoring ports should be sampled monthly for nitrates, bacteria (total and fecal coliform), and ground water elevation. The results of these analyses should be submitted to EPA Region 9's Ground Water Office.
- No septic tank additives should be used to improve wastewater treatment. Properly designed and installed septic tanks already possess all the required bacteria and enzymes to efficiently treat wastewater. Septic tank additives have been shown to remove solids from the septic tank and deposit them in the drainfield. Solids in the drainfield plug the soil pores, causing inadequate wastewater treatment and drainfield failure. The only proper remedy for drainfield failure is the construction of a new drainfield and cutting off wastewater flow to the failed drainfield until the added solids are decomposed. Region 9 would like to see this recommendation incorporated into the Homeowner's Association codes.

Follow-up?